

Geo-Forensic Application for Coastal Resource Inventory: Biloxi, Mississippi.

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A historic shoreline evolution was recreated through the use of ground-truthed, geo-rectified local maps and USGS T-sheets coupled with subsurface geology. As shorefront property has progressed from a natural buffer zone to an economic commodity, publicly held lands are becoming increasingly more valuable. It therefore behooves a coastal state to reclaim ownership of public lands that might have changed through time as a result of relative sea-level rise and human modifications. Legal debates surrounding rightful ownership can arise as the common data sources of past shoreline configurations, historic local maps, early USGS T-sheets and aerial photography when available, have relative accuracy limitations. This was the case in a historic section of the Biloxi, Mississippi waterfront where the casino industry replaced an extensive oyster industry. Spits created by shucked oyster shells evolved into high-price property being rented/leased by the adjacent upland owners. The state of Mississippi has ownership of all lands below high-tide and as this land had been below high-tide before filling it was the state's property. Shorelines from USGS and insurance maps from the turn of the century were being contested by the upland owners. To counter the claims GPS and geologic data were added to the GIS-created shorelines to reduce errors and test the original map accuracy. Historic buildings present in an 1851 USGS map were surveyed using DGPS to provide a measure of the map's local accuracy. In addition, subsurface sediment character and topographic contours were successfully compared to historic insurance maps. The combined use of cartographic and geologic data helped strengthen the state government's claim to tidelands property. The lessons learned are applicable to many coastal communities that experienced unchecked human modifications before management principles were applied and/or enforced.